

CLAIMS

1. A bicycle having front and rear wheels mounted to a frame, wherein the rear wheel comprises a hub-mounted planetary gearbox having an outer casing, a spindle and a driven wheel, and wherein the rear wheel is mounted to the frame at one side of the wheel only by means of a rear arm having a transversely-extending mounting portion at its rear end adapted to engage a bearing mounted externally of the casing of the gearbox, and the rear arm being substantially tubular in form with an internal cavity adapted to receive a driving wheel, the driven wheel, and an endless tension element for transmitting driving force from the driving wheel to the driven wheel.

2. A bicycle according to claim 1, wherein the endless tension element is a chain, and the driving and driven wheels are sprockets.

3. A bicycle according to claim 1, wherein the endless tension element is a toothed or plain belt, and the driving and driven wheels are pulleys.

4. A bicycle according to any preceding claim, wherein the tension element comprises an upper run and a lower run, the lower run being engaged by a jockey wheel mounted on a swing arm biased to urge the jockey wheel toward the upper run.

5. A bicycle according to any preceding claim, wherein the rear arm is a cantilever arm fixedly mounted at its forward end to the bicycle frame.

5 6. A bicycle according to any of claims 1 to 4, wherein the rear arm is braced by a strut extending from a point at or near its rear end to the frame.

10 7. A bicycle according to any of claims 1 to 4, wherein the rear arm is pivotally mounted at its front end to the bicycle frame to form a swinging arm, the wheel is mounted to the rear end of the swinging arm, and a spring and damper assembly acts between the swinging arm and the frame.

15 8. A bicycle according to any preceding claim, wherein the rear arm comprises a pair of concave half-shells having corresponding internal ribs extending between mating internal studs integrally formed with the ribs and the half-shells respectively.

20 25 9. A bicycle according to claim 8, wherein the studs of one half-shell are formed with blind threaded holes, and the studs of the other half-shell are formed with through holes to accept threaded fasteners for securing the half-shells together.

30 10. A bicycle according to claim 8 or claim 9, wherein the ribs and studs are positioned, in relation to the endless tension element, such that at least one

of the studs is positioned within an area bounded by the tension element.

11. A bicycle according to any of claims 8 to 10,
5 wherein the tension element comprises an upper run and a lower run, and the ribs and studs are positioned, in relation to the endless tension element, such that the studs are all positioned below the upper run of the tension element.

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12. A frame for a bicycle, to which a rear wheel having a hub gearbox having an outer casing, a spindle and a driven wheel may be mounted with one side of the wheel unobstructed by frame elements, the frame comprising a rear arm having a transversely-extending mounting portion at its rear end adapted to engage a bearing mounted externally of the casing of the gearbox, and the rear arm being substantially tubular in form with an internal cavity adapted to receive a driving wheel, the driven wheel, and an endless tension element for transmitting driving force from the driving wheel to the driven wheel.

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13. A frame for a bicycle according to claim 12,
25 wherein the rear arm is pivotally mounted at its front end to the remainder of the bicycle frame to form a swinging arm, and a spring and damper assembly acts between the swinging arm and the frame.

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14. A frame for a bicycle according to claim 12,
wherein the rear arm is a cantilever arm fixedly mounted at its forward end to the bicycle frame.

15. A frame for a bicycle according to claim 12, wherein the rear arm is braced by a strut extending from a point at or near its rear end to the frame.

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16. A frame for a bicycle according to any of claims 12 to 15, wherein the rear arm is pivotally mounted at its front end to the bicycle frame to form a swinging arm, the wheel is mounted to the rear end of the swinging arm, and a spring and damper assembly acts between the swinging arm and the frame.

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17. A frame for a bicycle according to any of claims 12 to 16, wherein the rear arm comprises a pair of concave half-shells having corresponding internal ribs extending between mating internal studs integrally formed with the ribs and the half-shells respectively.

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18. A frame for a bicycle according to claim 17, wherein the studs of one half-shell are formed with blind threaded holes, and the studs of the other half-shell are formed with through holes to accept threaded fasteners for securing the half-shells together.

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19. A rear arm for a bicycle frame, to which a rear wheel having a hub gearbox having an outer casing, a spindle and a driven wheel may be mounted with one side of the wheel unobstructed by frame elements, the rear arm comprising a transversely-extending mounting portion at its rear end adapted to engage a bearing mounted externally of the casing of said hub gearbox,

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and the rear arm being substantially tubular in form with an internal cavity adapted to receive a driving wheel, the driven wheel, and an endless tension element extending round a closed path for transmitting driving force from the driving wheel to the driven wheel.

20. A rear arm according to claim 19, further comprising mounting means at its front end for pivotally mounting the rear arm to the remainder of the bicycle frame to form a swinging arm, and attachment means intermediate its length for attaching a spring and damper assembly to act between the swinging arm and the frame.

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21. A rear arm according to claim 19 or claim 20, wherein the rear arm comprises a pair of concave half-shells having corresponding internal ribs extending between mating internal studs integrally formed with the ribs and the half-shells respectively.

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22. A rear arm according to claim 21, wherein the studs of one half-shell are formed with blind threaded holes, and the studs of the other half-shell are formed with through holes to accept threaded fasteners for securing the half-shells together.

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23. A rear arm according to claim 21 or claim 22, wherein the ribs and studs are positioned to provide a path for a tension element receivable in the rear arm

such that some of the studs are positioned within an area bounded by the path.

24. A hub for a bicycle wheel comprising a generally cylindrical casing for a planetary gearbox, the casing being adapted to receive an external bearing intermediate the axial extent of the casing for mounting the hub to a bicycle frame, and the hub further comprising releasable mounting elements

5 cooperable with mounting formations formed on a bicycle wheel for releasably mounting the wheel to the casing.

25. A hub for a bicycle wheel according to claim 24,

15 wherein the casing comprises coaxial outer and inner shells separated by an annular recess open towards one axial end of said hub, and wherein the bearing surface is a radially-facing surface within the annular recess.

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26. A hub according to claim 25, wherein the bearing surface is provided on a radially-outwardly facing surface of the recess.

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27. A hub according to claim 25, wherein the bearing surface is provided on a radially-inwardly facing surface of the recess.

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28. A hub according to any of claims 24 to 27, wherein the mounting formation comprises a splined shaft coaxial with the hub.

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29. A hub according to any of claims 24 to 27, wherein the mounting formation comprises a tapering conical projection coaxial with the hub.

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30. A hub according to claim 28 or claim 29, further including retaining means operable to retain a bicycle wheel mounted to the hub against movement in the axial direction away from the hub.

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